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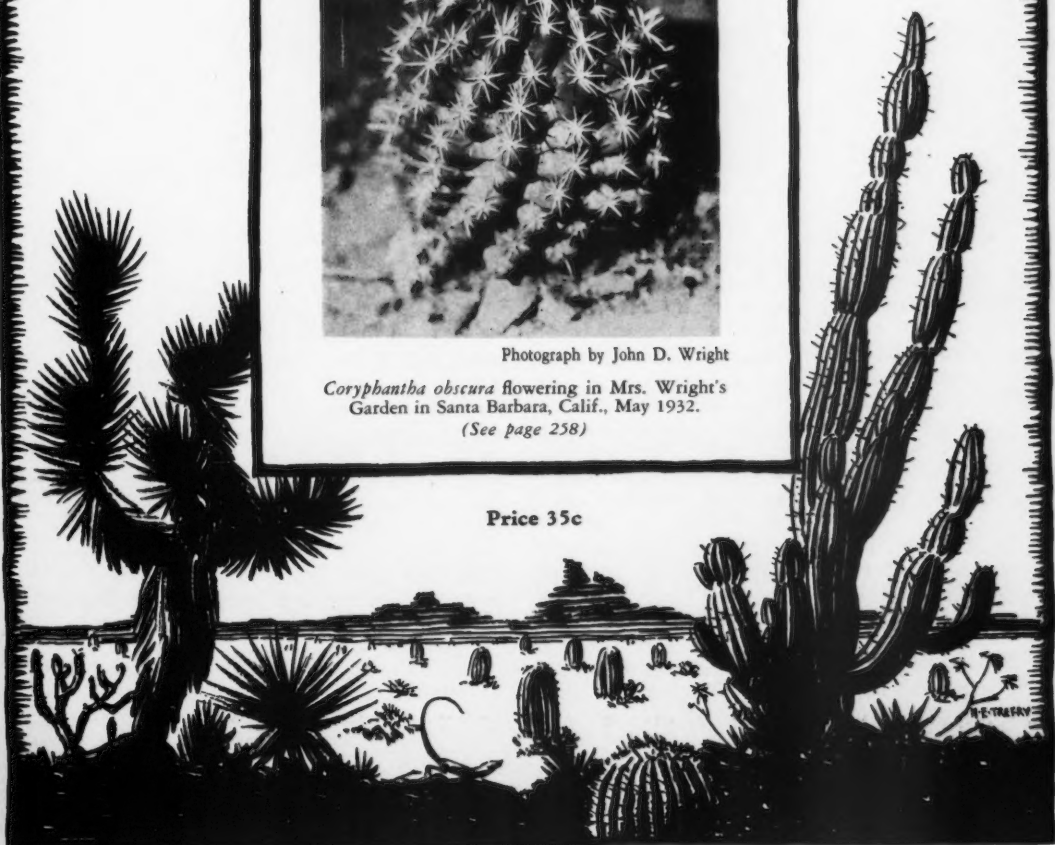


Photograph by John D. Wright

Coryphantha obscura flowering in Mrs. Wright's
Garden in Santa Barbara, Calif., May 1932.

(See page 258)

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CACTUS AND SUCCULENT JOURNAL

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THE CACTUS AND SUCCULENT SOCIETY OF AMERICA

A monthly magazine to promote the Society and devoted to Cacti and Succulents for the dissemination of knowledge and the recording of hitherto unpublished data in order that the culture and study of these particular plants may attain the popularity which is justly theirs. "The Cactaceae," by N. L. Britton and J. N. Rose, has been adopted by this journal for purposes of identification. (Membership and subscription \$3.00 per year, foreign \$3.00 per year.) Mail membership application and subscription to the Secretary, Margaret Kincher, 1421 Dominion Avenue, Pasadena, California.

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Coryphantha obscura Boedeker

(See illustration on cover)

A description of a new series. Translated by Kathe
Schlange from Monatschrift der Deutschen Kak-
teen-Gesellschaft Band 2 1930 p. 25-26.

By FR. BOEDEKER, Cologne, Germany

Simplex, elongato-ovoidea, vertice vix umbilicata et parce lanuginosa; mamillae ad 8 et 13 series ordinatae, cylindraceae, supra sulcatae, apice truncatae; areolae orbiculares, sublanuginosae, mox glabrescentes; aculei radiales 10, horizontaliter divaricati, recti, tenues, subuliformes, cani, basi incrassati, centrales 4, radialibus subaequales, paullo crassiores, supra nigrescentes; axillae verticem versus sitae sublanuginosae dein glaberrimae; flores ex vertice, aurantiaci; stylus stigmatibus 8-10 stamina superans, semina nephroidea, laevia, nitida, fusca.

Body single, not caespitose, elongate-ovate about 11 cm. high, 9 cm. in diameter, dull shiny blackish-green. Apex hardly depressed, slightly covered by the spines, somewhat woolly only at youngest areoles. Tubercles arranged in cycles of 3/8 or 5/13, the upper ones nearly over-lapping long-conic to cylindrical, about

20 mm. long, 6 mm. in diam. above, flattened out below to 15 mm., with a sharp, naked groove on upper side, rather widely truncate at apex. Areoles circular, only the very youngest ones on the apex white woolly, 3 mm. in diam. later naked. Radials about 10, all light grayish horn-colored, black at the extreme tip, stiff, attenuate—subulate, radiate, the uppermost more densely so. At least 20 mm. lg. Centrals 4, the lower perrect and hardly curved, the other 3 radiating, the uppermost more erect than the two flanking ones, all centrals are stouter, subulate, of same length and color as the radials, except for being jet-black on upper side. All spines are bulbously thickened at base. Only the axils at apex of plant bear a hardly visible amount of wool, otherwise they are naked and without glands.

Flowers—Several at extreme apex, broadly funnel-form, upper diameter to 5 cm. Ovary

(Continued on page 264)



Photo by Eric Walther

A meritorious hybrid *Echeveria* (S. M. No. 1) in
the Author's collection.

The Status Quo and the Camel's Hair

By VICTOR REITER JR.

There are many in the flock of worshippers at the succulent altar who polarize their admiration in the plane of species only. They insist on having their gardens filled with plants of authentically wild origin. Strangely, if a natural hybrid storms at the gate it is welcomed and pampered, but if a carefully hybridized plant of merit should aspire to their sanctum it finds the gate latched.

The writer, who weeds about the ECHEVERIOIDEAE, has found that if a hybrid, such as *E. weingartii*, possesses a harsh or difficult but fully latinized name, it can easily crash the

gate of the most sacred species collection. When we consider that a large part of these named varieties are nothing but named hybrids, this position held by exponents of species supremacy is uncertain. Further, when we observe the "classical" beauty of some of these species, we can easily forgive the weeding mistakes of practical gardeners.

Just because seed is hard to set in dimly lighted countries there is no reason why only hybrids of ancient vintage should share with the species the preferred position in the eyes of "those who know."

Unfortunately bees are so furiously fond of their work that thousands of unwelcome hybrids clutter our seed-pans. Often the gardener must run the gamut of inferior seedlings by the hundreds to get a few true species seedlings. This blinds us to the meritorious hybrids the gardener might have made, in this land of ripening sunshine, if he had usurped the bee's role of parson.

We should espouse a program of plant improvement as well as one of new introduction. The day must come when we have exhausted the species possibilities in our particular field. What then? All that then remains is to convert the best of them to more beautiful and tractable subjects. We have the ideals of color, size, hardness, form, flower characters, etc., to draw from and it might prove a more fertile effort to combine the best characters of the finer varieties than to merely collect plant bric-a-brac of only possible hybridizing value. Those plants capable of permanent appeal in our species collections unconsciously intrigue the fancier with their distinctive beauty and the urge to improve their characteristics should be difficult to deny.

There are already available in California (for *Echeveria* at least) far more beautiful

hybrids than anything named by our European friends and decidedly more worthy of a handle, but these find difficulty in meeting their inferior brethren and parents on an equal footing. They are plants without a name engulfed in masses of inferior brothers.

More careful efforts with the better species could give even finer results than those thus far obtained by accident. Practically all our hybrids are first generation seedlings of potent pollen parents and the hybridization of more, different and less assertive varieties over several generations of seedlings would most certainly result in finer things. Let us hope that members of our clan will be leaders in this direction.

Considering the effort involved in raising seedlings it is well worth expending a little additional effort in securing good pedigreed seeds. Anyone with a collection of the better (not necessarily the rarer) species as well as a good assortment of pedigreed first generation hybrids and a clean camel's hair brush is equipped to follow Mendel. In the last analysis we cultivate garden plants for their beauty, and to bend our efforts to concentrating that beauty is fully as worthy of notice as classifying them.

An American Euphorbia

By G. A. FRICK

Having just received from Germany a catalogue listing for the first time seeds and plants of *Euphorbia macrocarpus*, information of this plant will be welcomed.

There is nothing in the way of beauty to warrant this species a place in the collection of Euphorbias. Growing in its native habitat and out doors in California gardens, it develops an unsightly bark-like coat which gives the plant a dried, woody appearance. When grown in pots under glass, there is a slight improvement, the stems assume a permanent tomentose coating somewhat similar to plush.

This species is known to most collectors as *Euphorbia parkardii*, but no authority can be found for this name either as a species or a synonym. Some call it *Euphorbia*, others use the generic name *Pedilanthus*, but to use *Euphorbia pedilanthus macrocarpus* is not botanically correct; therefore Dr. C. F. Millspaugh, in his contributions to North American Eu-

phorbiaceae, Plants from Lower California, page 217, 1889, converts this trinomial name to the generic name of *Eupedilanthus*.

Eupedilanthus macrocarpus, Benth., occurs on the Sonoran mainland, the Cape region of Baja California, and on most of the adjacent islands down the Mexican west coast. On Santa Margarita Island, which is generally barren and desert-like in character, it is one of the few plants of the scanty vegetation growing there. In the vicinity of Magdalena Bay this plant seems to have found its ideal environment, for it thrives there as though it were cultivated. As near as the writer can learn, the farthest north that this species occurs is about 100 miles south of the border line in Lower California. The statement that it has been found growing north of the border in San Diego County, California, can not be verified.

Inquiries made of Mexicans concerning the medicinal or other needs that the plant sup-

plies brought the reply that there were none; to them it is just another weed. None had ever heard of its piscatorial value, yet *Machae-rocerus gummosus*, which has no acrid latex, is known to them as a fish catcher. One boy volunteered the information that the milky juice from the plant placed on the nose and other sensitive parts of his dog caused the dog

cristate specimen. This cutting was established one year ago and has doubled in size since planting.

There is little or no cultural information necessary for this plant. It does well in any soil and without water for months; yet when given a constant soaking under which most *Euphorbias* would rot, it lives merrily on, showing no material difference in growth. The only warning needed is to be careful when breaking up the surface soil around the plant with a tool, as the young shoots force their way up from the roots and are present one to two inches from the nearest stem, when close to the surface and still out of sight there is danger of cutting or breaking these sprouts.

Eupedilanthus macrocarpus Benth. was first discovered on the voyage of H. M. S. Sulphur, 1836 to 1842 and figured by Bentham. The name *macrocarpus* (Large Fruited) was taken from the seed pods set on short peduncles which greatly increase at the base. The staminate flowers grow in a cluster of 30 or more; because of a fold the exterior ones are extended a little; the flowers which are pistillate, are solitary. The short fleshy jointed branches have small egg-shaped leaves with pointed ends, which are flat and have a sort of keel-shaped ridge below. The capsules are a fleshy pod more than the thickness of a thumb in diameter and sharpened to a point, with seeds in a row up and down two conical-shaped horns, the seeds are round with two horns or points.

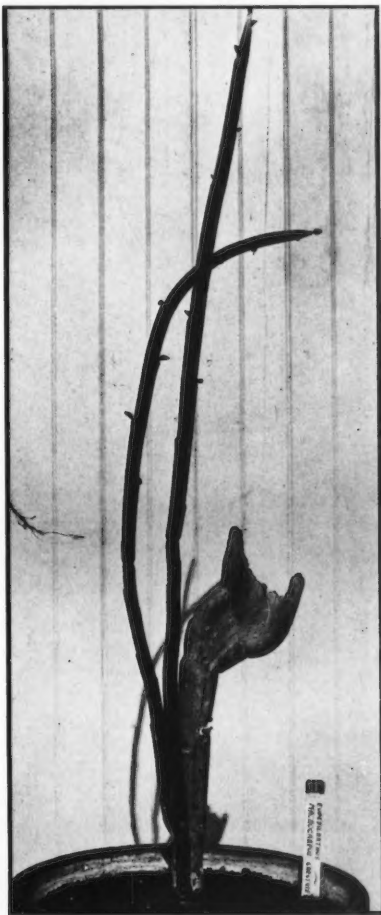


Photo by Sloane

Eupedilanthus macrocarpus

to clown and act in a way that furnished much amusement for the boy and his friends. His dog would run away and stand at a safe distance whenever the lad broke off a branch from this plant.

The photograph of this species shown herewith is that of the natural stem growing on a

DRUNKEN SEEDS

By G. A. FRICK

Whether or not this is in violation of the 18th Amendment is for you to decide. In the American Journal of Botany, Dr. Henry I. Baldwin of Saranac Lake finds that seeds given a "shot" of alcohol seem to have reactions much the same as humans; it peps them up for a while, then brings about a depressed state. A second dose restores vigor temporarily, but the following depression is even deeper. These are not the results of observations on seeds of Cacti or Succulents, but there is no reason to believe cactus seeds would not respond to alcohol as did the seeds experimented with. Seeds immersed for a short time had their rate of germination appreciably increased when planted immediately. But if allowed to sleep off their "jag" for a few months the germination rate fell off, as compared with "teetotaler" seeds.

Given a second alcohol "spree" these inebriated seeds underwent a shorter regeneration of their sprouting, then lost it again. Just how seeds of *Opuntia occidentalis* would respond to a little "whoopie" compared with their sober sisters will make interesting experimenting for some member living where this species is common, and seeds plentiful.

*Aloe confusa* Engler

Photo by F. Tose

Notes on Aloe

By ERIC WALTHER

As a change from our past discussion of Aloe-species grown in our gardens it may not be unwelcome to say something about some of the species as yet unknown here.^(1*) For the first example we choose *A. confusa* Engler, illustrated in the appended photo. This last shows the species in its native habitat in Kenya Colony, British East Africa. The picture was taken by Mr. F. Tose, Taxidermist and Curator of Exhibits, Cal. Academy of Sciences, Golden Gate Park, on that Institution's 1930 African expedition. The exact locality of the picture is in the so-called "Kijabe" Region, the name, from the Somali, presumably meaning "wind", in allusion to the ever-present strong breeze there

blowing. That the species is not yet known here is surprising,^(1*) especially in view of the fact that a tourist hotel, with every modern convenience, is located within a few minutes walk of the locality; and an experiment station of the local Department of Agriculture is only five minutes walk distant. So let us hope that we shall soon be able to report its introduction.

A. confusa Engler belongs to Berger's *Fruticosae*, a group characterized by the elongate stem with remote, lanceolate-ensiform^(2*) leaves, compound inflorescence, the branches of which are *not* subsecund. The species may be distinguished from the others of the group by the slender perianth-tube which is slightly decurved,

1. *Since writing the above we have found what we believe to be *A. confusa* flowering at the Huntington Botanical Gardens.

2. *Sword-shaped.

the lax racemes, and the subulate, erect bracts. The flowers in our picture appear longer than the 20 mm. mentioned by Berger, but nevertheless we feel disinclined to place this into

A. macrosiphon Baker, which is only imperfectly known and should have reflexed bracts. This botanizing at a distance of 10,000 miles has its difficulties, it will be noticed.

A New Species of Dudleya

By kind permission of the author we here reprint in full the original description of a new species of *Dudleya* as it appeared in *Proceedings of the California Academy of Sciences*, Fourth Series, Vol. XX, No. 5, pp. 147, 148. December 18, 1931.

Miss Alice Eastwood, Curator of Botany at the Academy and one of the greatest living authorities on the flora of California, is one of our most valued members, and we are deeply appreciative of her continued interest in this Society.—Ed.

Dudleya murina Eastwood, new species.

Caudex branching from a thick root; leaves linear-acuminate, farinose, reddish, the largest 10 cm. long, less than 1 cm. wide at base, tapering to a fine point, rounded or keeled along the back, slightly concave on the front;



James West photo

Dudleya murina Eastw.

At type locality Jan. 1931

flowering stems several, about 2 dm. high, reddish and farinose; lower cauline leaves lanceolate-attenuate, 3 cm. long; upper, ovate, clasping, spreading, diminishing upwards to the small bracts; inflorescence a laxly-spreading panicle, pedicels 1 to 4 mm. long; calyx divided to the base, the divisions lanceolate, acute, 5 mm. long, half as long as the corolla; petals connivent to 5 mm. with tips spreading, acute,

pale yellow or almost white, keeled and irregularly striped with red; filaments 5 mm. long, anthers oblong, yellow 1 mm. long; immature follicles connivent with red ribs and long styles.

Type: No. 157346, Herb. Calif. Acad. Sci., collected by the author (No. 15128a), May 19, 1928, growing on serpentine rocks along the road up Cholla Creek, San Luis Obispo County, California. The mouse-color of the plant gives it its name.



James West photo

Dudleya murina Eastw.

Plant in seed at type locality, shady side of creek. Jan. 1931.

Note by James West

The plants in seed were photographed at the type locality. The flowering specimens are plants in cultivation, first received by the kindness of Miss Gertrude Sinsheimer of San Luis Obispo. I have grown some of these for upwards of three years, both in pots and in the ground, with the result that they have kept their color and habit without noticeable divergences from that of plants in the wild state. There is, as in all the genus, a tendency towards broader leaves, greener in color when growing in shel-

tered positions, but no more so than in wild plants; for instance, right at the type-locality, where they grow on the low rocky banks on both sides of the creek which runs roughly E.



James West Photo

Dudleya murina Eastw.

Flowers approximately x1. Collection of James West. and W., the plants facing N. or E. are decidedly greener and broader-leaved than on the exposed opposite bank.

The species seems to be, within its apparently very restricted area, quite abundant on all serpentine outcroppings in the immediate environs of the city of San Luis Obispo, where the soil is a heavy black adobe. Like most Southern California *Dudleyas*, it is almost invariably associated with the moss-like *Selaginella Bigelovii*.

As a garden plant, *D. murina* is easily one of the most distinctive of its kind, for, while not at all showy, the blend between the mouse-grey of the rosettes and the quite peculiar combination of straw and russet of the flowers is unmistakable, and entirely unlike, for example, the effect produced by the pure straw-yellow of corolla combined with crimson calyces and stems and green leaves in such a species as *D. compacta* Rose.

The colors of the new species repeat almost exactly the hues found in the weathered serpentine of its native habitat.

Coryphantha obscura Boedeker

(Continued from page 258)

oval about 10 mm. lg. and 8 mm. in diam. pinkish-white. Outer perianth segments 8-15 mm. lg. 2 mm. wide, oblanceolate, slightly apiculate with short brownish pungent tip and sharp edges, olive green with yellow margins. Outer petaloid segments elongate rounded above. Here finely crenulate, ending in a pungent brown tip, 25 mm. lg. 6-8 mm. wide, of a dirty light orange with brownish mid-stripe below, which appears as dark yellow above. Innermost perianth segments, like the former with a silky sheen, similar in size and shape, but slightly narrower at base, of a more or less showy orange to brownish-orange and at the base a striking deep fiery-red. Filaments very numerous, inner ones yellow, outer ones deep orange-red, anthers small, light ochraceous-yellow. Style 2 cm. lg. Yellowish above, delicate pink towards base, with 8-10 stout radiating stigma lobes to 4 mm. lg., straight, sulphur-yellow, just overtopping the anthers. Fruit pale green, fairly large ovate, flowers withering-persistent. Seed kidney-shaped, smooth, shiny brown 2 mm. large with umbilicus on side.

Distribution: Mexico, in the northern part of Nuevo-Leon in gravelly soil in moist hot lands near Lampazos. Discovered by F. Ritter of Saltillo in 1928. Even the seedlings are from the beginning of a blackish-green color. Systematically the species belongs next to *C. speciosa* Boed., the differences being principally in the blackish-green color of the body, the much darker perianth-segments, broad above and colored deep red at the base, and in other characters.

Harry L. Bettencourt of San Leandro, California, just returned from a field trip in Mexico, found an *Opuntia* that is new and has all the appearances of a *Wilcoxia* even to the tuberous roots. It was thought by botanists at the University of California at Berkeley that perhaps it was a new genus.

Movie stars of Hollywood that collect Cactus as a hobby are John Gilbert and Harold Lloyd.

NOTE: The following 8 pages are the 14th installment of the Britton and Rose reprint of Vol. I, The Cactaceae.

The Stapeliaceae

13. The Miscellaneous groups

By ALAIN WHITE and BOYD L. SLOANE

The section *Fissirostrum* N. E. Br. was suggested in 1890 by N. E. Brown to provide for three *Stapelia*s, the front horns of whose inner corona lobes were more or less deeply bi-cleft. The name means "cleft beak". Only one of the species has found its way to this country as yet, the "red *Stapelia*", *S. rufa* Mass. This is a plant with pubescent stems and flowers an inch and a half wide, with a shallow, bell-shaped depression at the center of the corolla and broadly pointed lobes, dark violet, transversely rugose and somewhat hairy at the tips, fringed with simple hairs.



Photo by Havens

FIG. 73. *Stapelia pulchella* x.75

The last of Haworth's divisions of the genus *Stapelia* was *Podanthes* Haw., a large group, now containing some eighteen members, varying in so many particulars that their unity, which consists in having the lobes of the inner corona hardly longer than the anthers and usually free of any wing-like appendage or outer horn, is easily lost sight of. Several species have a thickened cushiony ring on the corolla. Others are without any semblance of a ring.

The stems are very variable, becoming less and less like those of *S. variegata* as the rings disappear from the corolla. In so far as the stem only is concerned, *S. pulchella* Mass., from the Cape, is an exact *Orbea*. The somewhat

irregular four-ribbed stem, with its characteristic protuberances, is indistinguishable from *S. variegata*, and the plant is often sold as a variety of the latter. This makes the surprise of the collector all the greater when he first sees the dainty little flower which so well justifies the specific name of the "Little beauty". The *Orbea* ring has been replaced by a solid slightly raised cushion or annulus, five angled. The whole corolla is of a sulphur-yellow color, marked with purple-brown dots, which are smaller on the annulus. *S. pulchella*, says N. E. Brown, "by its two-horned inner corona-lobes and small solid annulus completely connects the groups to which *S. variegata* and *S. verrucosa* respectively belong".

This *S. verrucosa* Mass., the "wartflowered *Stapelia*", is another delightful plant. It is widely distributed in the Cape Colony and several varieties of it exist. The stem at first glance also suggests the *Orbeas*. They are entirely smooth, the ribs slightly irregular and toothed, but the teeth are unusually large and projecting for a *Stapelia*. They grow vigorously and readily form large tufts or branch into long hanging arms over the edges of their pots. The flowers are under two inches in diameter, pale yellow, spotted with blood-red and dark brown markings, and with a five-angled cushion at the center, resembling that of *S. pulchella*. The species was introduced to our collectors by E. O. Orpet of Santa Barbara, who has raised so many succulents from imported seed, and it will certainly be one of the favorite *Stapelias* soon. The plant is so striking that it makes an excellent picture, and it is interesting to compare the drawing in Curtis' Botanical Magazine for 1809, which we reproduce by kind permission of the Royal Horticultural Society of London, with our own photograph made nearly a century and a quarter later.

In the "small-dotted *Stapelia*", *S. parvipuncta* N. E. Br., the corolla cushion is somewhat different, but still a conspicuous feature. This is one of the few species among the miscellaneous *Stapelias*, now represented in our collections by seedlings or plants, which has flowered with us. The stems are quite

distinctive and the flowers are said to be even more so (Fig. 74). They are an inch or more in size, ciliate with very long vibratile purple hairs along two-thirds of the length of the corolla lobes. The inner surface of the corolla is pale sulphur white covered with minute dust-like dots of purple-brown, those on the lobes sometimes larger, and the lobes sometimes narrowly margined with purple.

A recently imported *Podanthes* is *S. cooperi* N. E. Br., which grows from the Coast section of the Cape to the Kalahari region. Its stems are variegated in color and strongly toothed, and they have two little stipules at the sides of the teeth in the manner of some of the *Carallumas*. The corona also, according to N. E. Brown, suggests a combination of *Caralluma* and *Piранthus*. The flowers are very striking, less than two inches in diameter, light yellow marked throughout with purple, and with tubercled ridges on the ring and lobes. The ring, or cushioned annulus, is very prominent, with a

up of the "Kwebe Stapelia", *S. kwebensis* N. E. Br.; the "long-pediceled Stapelia", *S. longipedicellata* N. E. Br.; "Jutta's Stapelia", *S. jut-*

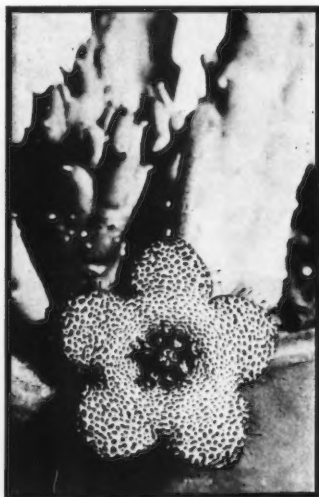


Photo by Sloane

FIG. 74. *Stapelia parvi-puncta* x. 75

tae Dtr.; and the "Bullsport Stapelia", *S. portae taurinae* Dtr.

S. kwebensis is a variable species, and the other three may almost be considered as varieties of it. Indeed *S. longipedicellata* was formerly regarded as a variety of *S. kwebensis*, from which it was recently separated by N. E. Brown



FIG. 75. *Stapelia verrucosa*
From Curtis Botanical Magazine, 1809.

central depression containing the corona. The basal half of the lobes are ciliate with vibratile, clavate purple hairs.

Very similar is "Tapscott's Stapelia", *S. tapscottii* Verdoorn, a recent discovery, about 1927, in Bechuanaland. It differs in having the teeth on the ribs of the stems even longer than those in *S. cooperi*, retaining the little stipules, which appear in no other species of *Stapelia* except these two. The flowers are whitish.

Finally there is a little group of four species within the *Podanthes* relationship which may be called the "Kwebensis" group. It is made

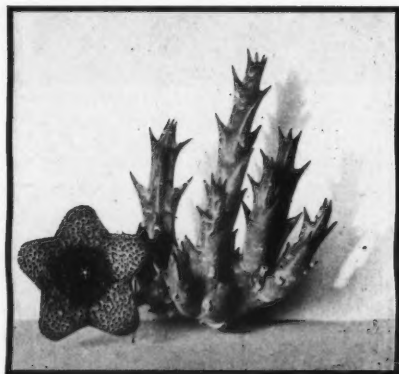


Photo by Sloane

FIG. 76. *Stapelia verrucosa* x. 50

and raised to specific rank. It was imported to this country by W. I. Beecroft, to whose interest in the STAPELIEAE we owe so many of our choice species.

S. kwebensis and *S. longipedicellata* differ primarily in the position of the flower clusters and the length of the flower stems. *S. longipedicellata* has irregular clusters of flowers

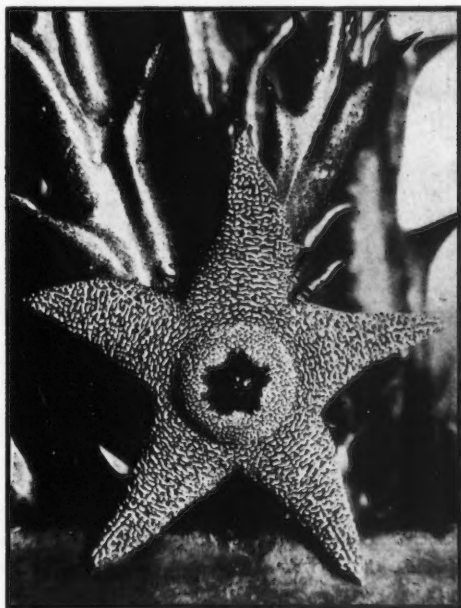


Photo by Sloane

FIG. 77. *Stapelia cooperi* x 2.

which suggest the inflorescence of some *Carallumas*, such as *C. lutea*, see Fig. 78. It is difficult to distinguish surely from *S. kwebensis*, but we believe our illustration, Fig. 79, is also of the long-pediceled species. The plant is a delightful one, with pale green stems and compressed ribs, and the flowers are extremely graceful, an inch or so in size, and chocolate brown. The corolla lobes are fringed with simple hairs. The corona is set in a shallow cup, the edge of which suggests the trace of ring, without there being any actual ring. The corolla lobes are very rugose, yet exceedingly delicate.

Kwebe is a small native settlement in Ngamiland, on the westerly edge of the Kalahari and north of the tropic line, and *S. kwebensis* is one of the three or four *Stapelias* to grow within the Tropics. To the west lies South West Africa, and it is here that *S. longipedicellata* grows, near Okahandya and in other localities, also within the Tropics. Extending nearly five hundred miles further south and well below

the Tropics appear the other two species, *S. juttae*, which was discovered by Dinter's wife, Frau Jutta Dinter, and *S. portae taurinae*. That still other forms in this relationship exist within this large territory is very probable, and some surprises may yet be revealed here, but meanwhile there is much to wonder at in the species we already have.

S. juttae is itself a unique *Stapelia*, for the outer corona is entirely absent. This singularity occurs in two *Carallumas*, but in no other *Stapelia*. Aside from this, the plant resembles *S. longipedicellata*, though the flower stems are even longer than in that species. The flowers are smaller and without any fringe of hairs. The color is black-brown.

In *S. portae taurinae* the outer corona reappears, but the lobes are surprisingly short, shorter, in fact, than they are broad. This plant has the singular habit of laying its flowers out flat on the ground, like some *Duvalias*, instead of raising them aloft, like *S. longipedicellata*.

As we leave the genus *Stapelia* we must remember that, not only do the sections we have spoken about overlap here and there in quite



Photo by Prof. Dinter

FIG. 78. *Stapelia longipedicellata* x. 75

bewildering fashion, but the genus itself comes so close at times to *Caralluma* that even the experts cannot completely disentangle them. These technicalities are not for us to consider



Photo by Sloane

FIG. 79. A long pediceled species

just now, but it is interesting to bear their existence in mind. We can all realize the great differences between the two genera at their ex-

trêmes. Away up north on the Coast of Coromandel, on the southwest coast of British India, grows *Caralluma adscendens* R. Br., a plant the native Telingas back at the end of the eighteenth century called "Car-allum". This name R. Brown adopted for the entire genus *Caralluma*. What a far cry it is from the slender Indian stems of this plant to the latest hybrid of *Stapelia variegata*! Yet somewhere near or below the Tropic of Capricorn, the characteristics of the two genera come so near meeting and blending that we are justified in thinking of the whole tribe of the STAPELIEAE as one big brotherhood.

There is at the Cape a very humble genus, *Pectinaria* Haw., which lives close to the soil, whose coronas speak of some relationship both to *Caralluma* and *Stapelia*. Their outer corona is sometimes cleft into regular lobes like *Stapelia*, at other times it is disk-like and intergrown like *Caralluma*. This inconspicuous folk has afforded some very startling surprises to botanists as versed in the STAPELIEAE as is N. E. Brown himself, and next month we are to have an account of their ways from none other than Mr. Brown.

News from the University of California Botanic Gardens

By JAMES WEST

After having been for years treated somewhat as the stepchild of a great University, the Botanic Gardens in Strawberry Canyon, on the west slope of the Berkeley Hills about a mile above the Stadium, are beginning to come into their own. Future developments contemplate the opening up of a generous number of acres for Botanical Garden purposes as soon as funds become available. At present the area under cultivation is being intensively developed, starting out from two principal nuclei. One of these is the extensive collection of *Rhododendron* species, formerly the property of Mr. Karl Andries, which was acquired through the generosity of a group of donors, and remains in charge of Mr. Andries, forming the nucleus for a representative collection of *Ericaceae*. The second is the collection of Cacti and Succulents, comprising many large specimen plants, some of which are of quite venerable age, having been inhabitants of the Campus for decades, and were moved from their former positions farther down to their present locations. This is more favorable for growth, being sunny, warm, well-drained and as nearly frost-free as can be found in Northern California. Testimony to the latter condition is a very large plant of *Agave attenuata*, a notoriously tender species which has lived long enough here to make a five-foot trunk. There are also very large specimens of other Agaves, of *Doryanthes Palmeri*, the rare white-flowered *Hesperaloe funifera*, many Aloes and a generous representation of *Crassulaceae*.

The activities now under way are due to the interest of the Director of the gardens, Dr. T. H.

Goodspeed, famous for his research work in genetics on the genus *Nicotiana*. A sabbatical year spent in Europe and in large part devoted to the study of Botanical Gardens there nurtured new ideas for adaptation at home, with the result that many developments may soon be looked for, beginning with the cactus and succulent area, now being re-planted, and contemplating in the near future a non-succulent Rock Garden and a Wild Garden.

Our readers will be particularly interested in the cactus and succulent garden, with the design and planting of which the present writer has been entrusted. The area set aside for this is a slope in the shape of a shallow amphitheatre. The space is to be treated as a rock garden, the planting to be as far as possible on taxonomic and phylogenetic lines. To preserve an effective landscape picture a certain amount of compromise will no doubt be necessary, but in the main the scientific and educational aspect will be the governing principle, as is proper for an institution of learning.

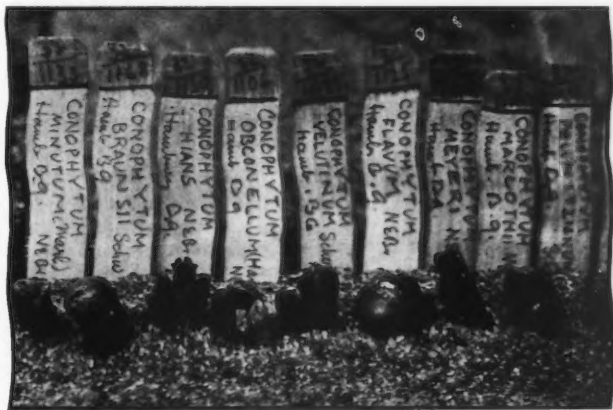
The past month or two has been taken up by tedious, but very necessary groundwork in the way of soil-improvement, as the original soil is an exceedingly heavy and impermeable adobe. Large quantities of soil, peat, sand, and ground mortar are being incorporated, which should mean a considerable improvement in growing conditions.

In the meantime some exceedingly interesting accessions to the stock of plants are being made, largely through Dr. Goodspeed's connections with foreign institutions. The Hamburg Botanic Gardens have sent a shipment of 100 specimens of succulent plants,

the majority of them very rare, many of them new to cultivation in this country, as the following partial list will show: *Aloe Bainesii*, Dyer, *A. Delaetii*, Radl.; *A. (Gastrolea) Walth.* *Lapaixii* Radl.; *A. microstigma* Salm; *Haworthia reticulata* (Willd.) Haw.; *Bulbine frutescens* Willd.; *Tradescantia navi-ularis*; *Euphorbia globosa* Sims; *Ecbeveria alpina*, *E. Bergeriana* *E. Derenbergii* Purp., *E. cuspidata* Rose, *E. pilosa*, *E. subalpina* Rose; *Monanthes polyphylla* Haw., *M. muralis* Hook; *Aeonium Saundersii* Christ, *Ae. villosum*; *Crassula Bolusii* Hook, *C. cultrata* L., *C. mitriformis*, *C. Montis Moltkei* Dtr., *C. orbicularis* L., *C. (Rochea) odoratissima* Andr., *C. punctata* L.

It is the intention in time, as far as possible, to assemble a complete collection of the cacti and succulents at the University, with special regard to the species hardy there, although a greenhouse has been set aside for a succulent house, to take care of such as need winter protection. The Botanic Gardens will be glad to acquire, by donation or exchange, any rare species not already in their collections.

To all good Californians it should appeal both as a pleasure and a duty to see to it, as far as they are able, that our State University become the repository for every species of cactus or succulent in present or future cultivation, so as to ensure for all time a per-



Imported *Conophytum* in U. of C. Collections.

C. tabularis; *Cotyledon ramosissima* S.-D.; *Sedum cupressoides* Hemsl., *S. oxypetalum* H. B. K.; *Conophytum Braunsii* Schw., *C. flavum* N. E. Br., *C. Calculus* (Berg.) NEBr., *C. bians* NEBr., *C. Marlothii* NEBr., *C. minutum* (Marl.) NEBr., *C. obconellum* (Haw.) NEBr., *C. Meyeri* NEBr.; *Conophyllum Clivorum*; *Glottiphyllum Marlothii* NEBr., A large series of *Ruschia* Schw. (*Mesembrianthemum* NEBr.), including the exceedingly fishy *M. semidentatum*; when unwrapped it smelled to high heaven! *Ceropegia cafferorum*, *C. dichotoma*; *Kleinia cylindrica*, *K. gomphophylla*, *K. spinescens*; *Senecio praecox*, *S. vestita* Berg., *S. scaposus* D. C.; *Nothonia trachycarpa* Klotzsch.

Another collection came from Kiel Botanic Gardens, containing several new species of *Mesembrianthemum*.

Last, but not least, a consignment has been received from the Parsons-Bettencourt expedition to Tiburon Island in the Gulf of California, and the Seri Indian country on the coast of Sonora opposite, with many interesting rare items, such as the much-discussed new *Opuntia*-like, tuberous-rooted species, which will probably soon find more detailed treatment in our pages, *Rathbunia alamosensis*, *Echinocereus grandis* and two *E. spp.* unidentified, possibly new, *Neomammillaria Sheldoni*, *N. Slevinii* and several others.

manent collection of these plants for study, instruction and enjoyment. Neither amateur nor commercial collections, however large today, can have the assured permanence of a great public institution. Some day—be it long distant!—the present popularity of cacti and succulents may wane. In such a case a Botanical Garden may be the only means of preserving many a valuable and interesting species from loss, even, considering the hazards to many rare plants, from possible extinction.

From a more general point of view it may not be out of place in this connection to mention a condition which is a positive disgrace to this state, the absence of any representative Botanical Garden. That California, of all the states in the Union, the one in which more different kinds of plants may successfully be grown in the open than in any other, more perhaps than anywhere else in the civilized world, a state of genial climate and life in the open, where horticulture can do more for the comfort and pleasure of the individual than almost anywhere else, should be without a great institution of that kind within its borders, is a serious discredit to an enlightened community.

Here is an opportunity for a genuine public service that might well be kept in mind by those fortunate enough to be able to render it.

The Study of the Cactaceae

By F. R. FOSBERG

As I have remarked before (Bull. So. Cal. Acad. V. XXX, No. 2, p. 50), the classification of the Cactaceae is in a very unsatisfactory state. This becomes evident to anyone who tries to identify a collection of cacti from any region which has a good representation of this family. With the literature extant it is absolutely impossible to definitely identify some forms, even common ones. The recognized authorities disagree upon the limitations of genera and species, upon nomenclature and upon the interrelationships within the family. Their keys are so unwieldy as to be almost impossible to use, and the results from using them are none too trustworthy.

This condition is not surprising with regard to those members of the family which occur in the tropics and in remote inaccessible regions, but what about our cactus flora right here in Southern California? One of the most prominent botanists in this region made remarks to me recently to the effect that the *Opuntias* of the *occidentalis-littoralis* type seemed to him a hopelessly mixed up mess. Other groups of plants present difficulties fully as great in classification, yet they are in a much more satisfactory shape, taxonomically. The oaks, for example, present innumerable perplexing variations, not only in vegetative characters, but in flower and fruit, which are much more important. Yet one with any experience with them does not hesitate to say which species any tree in this region belongs to, and even a rank amateur can key them down. The answer lies in the lack of herbarium material. In a critical group of this sort only large series of carefully prepared specimens, supplemented by much garden and field study can lead to proper understanding.

To the collector of botanical material in the field the cacti present discouraging problems. In the first place he gets spines in his fingers. Then usually he hasn't the slightest idea of how good cactus specimens should be put up. When cut open they not only get moldy, but take sometimes weeks to dry and soon his dryers become all cluttered up with cacti and his work on other plants is seriously hindered. The result usually is that he decides that life is too short to waste on cacti and devotes his attention to other plants. The taxonomist, con-

fronted with this lack of material with which to work treats them as best he can and then decides the same thing.

It seems to me that the Cactus and Succulent Society and other organizations of its kind are neglecting a big opportunity to do a great service to botany. Since the ordinary collector of botanical specimens does not usually bother with cacti, it is evidently up to those who are primarily interested in these plants to provide the material for the taxonomists to use. The members of this and other groups are in the field often collecting cacti for their gardens and it would be easy enough to spend a little extra time and make herbarium specimens out of some plants.

In the two important herbaria in the South, those of Pomona College and University of California at Los Angeles, together there are probably not many more than a hundred specimens of cacti. In other groups of plants there are often a hundred specimens of a single species. The Los Angeles Museum Herbarium is slowly acquiring the beginning of a useful collection, both of pressed and preserved material. Its immediate future, however, is rather uncertain because of the political nature of the institution. What I would suggest is that the people who are interested in cacti form the habit of making a few good, carefully prepared herbarium specimens of cacti every time they go on a trip and presenting them to one of these institutions. There they would be cared for and kept for all time. Specimens from garden plants are not so desirable, as cultivation sometimes produces confusing alterations in the plants and the practice would probably do more harm than good. Moreover, most gardeners seem to have a very vague and often inaccurate idea of where many of their plants are from.

Nothing is meant to be said against gardening whatever. Scientifically managed gardens like that of Mrs. John D. Wright of Santa Barbara are absolutely indispensable in the study of cacti. And all of them furnish a great deal of enjoyment to their owners. But, as cactus collecting becomes a game in which the chief objects are bigger, healthier and rarer plants than any one else has, so does its scientific value diminish.

Now as to the making of herbarium speci-

mens of cacti. First and foremost comes the taking of data. Take plentiful notes on the habit, the color, the way the spines stand out from the plant, the shape of the plant and its tubercles or ribs and the color and texture of both the skin of the plant and the parts of the flower. A photograph is very desirable. Both notes and photo should only refer to the actual plant used as the specimen. The usual herbarium data of exact location (including county), exact date, altitude, collector and the conditions under which it was growing should, of course, be included.

In preparing the actual plant many things must be taken into consideration and several methods are in use. The factors important in classifying the plant in hand should be kept in mind, such as structure and origin of the flower, form and tuberculation of the plant and so forth. Dr. Carl Epling of U. C. L. A. recently showed me some beautiful specimens in which he had removed the flower from the plant, split it in half and dipped the ovary into boiling water. They then dried rapidly under pressure between driers, keeping their colors beautifully. The plant may be split in half and dipped in boiling water also. Removing the pulp from the halves speeds up drying. The trouble with this method is that it does not show the origin of the flower. With a bit more labor the same thing can be accomplished and the flower be kept on the plant. With Echinocacti a whole rib, or the top portion of a rib in the giant species, may be taken, with flowers attached. Separate flowers are always useful in any case. With Cerei, a rib plus a portion of a cross-section, with flowers on the rib is good. The smaller Neomammillarias and Coryphanthas and their relatives behave very well merely split in half with the insides hollowed out. The same is true of Opuntias. The larger Neomammillarias and Coryphanthas are more difficult, but one may take a vertical slice through the center of the plant, then hollow out the sides. This will also apply to Echinocerei of the rigidissimus type, which are hard to handle like other Cerei. Phyllocacti and Pereskias may be pressed whole. Dipping in boiling water speeds up the drying in all cases, but the delicate parts of the flowers should not be dipped, as they shrivel up. Considerable pressure is necessary, and a few minutes with a screw press can accomplish wonders in flattening things out. Heat speeds up drying enormously, but too much of it cooks the plants, which is not at all desirable. The great diffi-

culty to surmount is the growth of molds. The only satisfactory way I have found to prevent mold is to liberally sprinkle the cut parts of the plants with dichloride or naphthalene crystals before putting the specimens into press and renewing it when it is evaporated. Specimens should not be larger than a 12 by 18-inch herbarium sheet. In this whole field there is plenty of room for the exercise of ingenuity, and a good collection of cactus specimens in the herbaria of Southern California is certainly a worthy object.

In recent numbers of the Journal I have noticed a number of remarks on Southern California cacti which my observations enable me to add to or correct. In the May, 1932, number, page 181, Mrs. Steele gives the blooming season of *Opuntia ramosissima* as late June and July. In 1930 I observed it in full bloom in April, and my collection of it from Banded Agate Mountain in northeastern Baja California made early in June was also flowering.

In March, 1932, page 149, Mr. Baxter speaks of always observing the flowers of *Opuntia bigelovii* to be yellow, while the description says they are purple. I have observed them a greenish yellow with a purplish blotch near the apex, and Dr. Epling has a beautifully pressed specimen with flowers of this color. The flowers of *Opuntia echinocarpa* vary from clear yellow to a purplish brown.

In the October, 1931, issue, page 70, Mr. Baxter credits *Neomammillaria goodridgei* to San Diego county. All the *Neomammillarias* that I have ever seen from the cismontane part of San Diego region have been referable to *N. dioica*. This, with the fact that the known range of *N. goodridgei* is in the central part of the west coast of Baja California, leads me to think that the plants which he has in mind must belong to *N. dioica*.

The *Opuntia* to which Mr. Baxter refers as *O. mojaviensis* in the December, 1931 issue is not that form at all, but an apparently undescribed subspecies of *Opuntia phaeacantha* which Mr. Pierce and I have had under observation for several years. I have a description of it in MS. The true *Opuntia mojaviensis* is a plant from the very eastern edge of the Mojave Desert. We know it from two collections, one by Dr. P. A. Munz from the Providence Mts., the specimen in the Pomona College herbarium, and the other by Mr. Wright M. Pierce from just across the line in California from Searchlight, Nevada. This plant will also have

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to be considered a subspecies of *Opuntia phaeacantha*. It differs from Mr. Baxter's plant in habit, spine characters and size and shape of joints. I will discuss it further in a paper which I have in preparation on this group.

I might further suggest that it would be advisable to require Latin diagnoses to accompany all descriptions of new genera, species and subspecies of varieties published in the Journal in order to comply with the International Rules for Botanical Nomenclature as accepted and amended by the International Congress of Botanists held at Cambridge, England, in the summer of 1930.

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